

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/48253

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G08B 13/14; B32B 31/00; H01Q 1/44, 7/00; H01R 43/00; H01L 23/02, 41/04, 41/08
US CL : 340/572.1, 572.7, 572.8; 156/292, 278; 343/856, 866, 870; 29/825; 257/679; 310/313R

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 340/572.1, 572.7, 572.8; 156/292, 278; 343/856, 866, 870; 29/825; 257/679; 310/313R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
none

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
none

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | US 6,147,605 A (VEGA et al.) 14 November 2000, Figs. 1-2 and col. 5, lines 12-52. | 1-2 and 8-9 |
| Y | | 3, 7 and 10-12 |
| Y | US 5,095,240 A (NYSEN et al.) 10 March 1992, Figs. 1 & 4 and corresponding disclosure. | 3, 7 and 10-11 |
| X | US 6,045,652 A (TUTTLE et al.) 04 April 2000, Fig. 13a; col. 8, lines 33-41; col. 9, lines 1-63; col. 12, line 35 to col. 14, line 49. | 13-14 and 16-17 |
| Y | | 12 and 15 |
| Y | US 5,852,289 A (MASAHIKO) 22 December 1998, Figs. 15-18; col. 2, lines 5-20; col. 5, lines 30-50; col. 9, lines 25-37. | 15 |
| A | US 6,094,138 A (EBERHARDT et al.) 25 July 2000, col. 2, line 39 to col. 3, line 49. | 1-21 |
| A | US 5,710,458 A (IWASAKI) 20 January 1998, Figs. 1-4. | 1-21 |
| A | US 4,999,742 A (STAMPFLI) 12 March 1991, Figs. 3 and 5-7. | 1-21 |

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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| * Special categories of cited documents: | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
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| "E" earlier application or patent published on or after the international filing date | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" document member of the same patent family |
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| "P" document published prior to the international filing date but later than the priority date claimed | |

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| Date of the actual completion of the international search 02 April 2002 (02.04.2002) | Date of mailing of the international search report 07 MAY 2002 |
| Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230 | Authorized officer Benjamin C. Lee Telephone No. (703) 305-8576 |

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | US 4,897,534 A (HAGHIRI-TEHRANI) 30 January 1990, Figs. 1-3 & 12. | 1-21 |
| A | US 5,654,693 A (COCITA) 05 August 1997, Figs. 1 & 2 and corresponding disclosure. | 1-21 |
| A | US 5,084,699 A (DEMICHELE) 28 January 1992, Figs. 5-6. | 1-21 |